

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing Of Claims:**

1.-18. (Cancelled)

19. (New) A method for checking a safety and a reliability of a software-based electronic system, comprising:

determining a first reliability function for checking a function of the software-based electronic system that is called for, based on required hardware components of the software-based electronic system, the first reliability function calculating a reliability of the function of the software-based electronic system; and

determining a second reliability function for calculating a reliability of at least one safety function of the software-based electronic system, wherein:

in order to determine the first reliability function and the second reliability function, software components of the software-based electronic system are taken into joint consideration, with the aid of the hardware components to which the software components are distributed.

20. (New) The method as recited in Claim 19, wherein at least one of the first reliability function and the second reliability function is determined for all functions of the software-based electronic system.

21. (New) The method as recited in Claim 19, wherein at least one of the first reliability function and the second reliability function is determined for all safety functions of the software-based electronic system.

22. (New). The method as recited in Claim 19, wherein values of the first reliability function and the second reliability function are calculated for a certain system architecture.

23. (New) The method as recited in Claim 22, wherein:

the system architecture is changed by at least one of the following components:

- an establishment of the hardware components necessary for implementing the system functions and the safety functions called for,
- an establishment of the software components necessary for implementing the system functions and the safety functions called for, and
- an assignment of the software components to hardware components.

24. (New) The method as recited in Claim 22, wherein the system architecture is optimized with the aid of a maximization of the calculated reliabilities for the system functions called for at different system architectures.

25. (New) The method as recited in Claim 22, wherein the system architecture is optimized with the aid of a maximization of the calculated reliabilities for the safety functions of the software-based electronic system at various system architectures.

26. (New) The method as recited in Claim 19, wherein a reliability function is determined using a reliability block diagram.

27. (New) The method as recited in Claim 19, wherein the system functions called for are monitored by monitoring functions for monitoring these system functions, the monitoring functions, on their part, being monitored by system monitoring functions.

28. (New) The method as recited in Claim 27, wherein the system monitoring functions at least partially monitor the system section which includes the monitoring functions for monitoring the system functions.

29. (New) The method as recited in Claim 28, wherein the system monitoring functions are distributed to two system sections, of which one system section includes the system functions called for, as well as their monitoring functions.

30. (New) The method as recited in Claim 29, wherein both system sections monitor each other via the system monitoring functions.

31. (New) The method as recited in Claim 19, wherein in order to check the safety and the reliability of the software-based electronic system:

establishing the hardware components of the software-based electronic system and their networking, including specifying the microcontrollers and their networking;

establishing software components of the software-based electronic system, which are required for implementing the system functions and the safety functions of the software-based electronic system, and specifying the communication between the software components;

assigning the software components to hardware components, especially to the microcontrollers of the software-based electronic system;

setting up reliability block diagrams for the functions of the software-based electronic system called for, including the safety functions, starting from the hardware components and hardware connections; and

calculating the reliability for the safety functions and the reliability for all the functions of the software-based electronic system called for, for the verification of the safety and the reliability of the software-based electronic system.

32. (New) The method as recited in Claim 31, wherein as an additional step, the system architecture, that is, the software network and the hardware network, as well as the assignment of the software components to hardware components is corrected, and the steps according to Claim 13 are repeated.

33. (New). The method as recited in Claim 19, wherein the method is used for assigning of software components to hardware components, such as microcontrollers, in a distributed and networked system.

34. (New) The method as recited in Claim 19, wherein the method is used for establishing the system architecture of a control unit including an engine control unit.

35. (New). A computer program having program code that when executed results in a performance of the following:

determining a first reliability function for checking a function of a software-based electronic system that is called for, based on required hardware components of the software-based electronic system, the first reliability function calculating a reliability of the function of the software-based electronic system; and

determining a second reliability function for calculating a reliability of at least one safety function of the software-based electronic system, wherein:

in order to determine the first reliability function and the second reliability function, software components of the software-based electronic system are taken into joint consideration, with the aid of the hardware components to which the software components are distributed.

36. (New). The computer program as recited in Claim 35, wherein the computer program is included in a computer program product.